A Novel Multiobjective Evolutionary Algorithm For Optimal Reactive Power Dispatch Problem

Abido, M.A. Bakhashwain, J.M.; Dept. of Electr. Eng., King Fahd Univ. of Pet. & Miner., Dhahran, Saudi Arabia;

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King Fahd University of Petroleum & Minerals

http://www.kfupm.edu.sa

Summary

In this paper, a novel multiobjective evolutionary algorithm for optimal reactive power (VAR) dispatch problem is presented. The optimal VAR dispatch problem is formulated as a nonlinear constrained multiobjective optimization problem where the real power loss and the bus voltage deviations are to be minimized simultaneously. A new Strength Pareto Evolutionary Algorithm (SPEA) based approach is proposed to handle the problem as a true multiobjective optimization problem with competing and noncommensurable objectives. A hierarchical clustering algorithm is imposed to provide the decision maker with a representative and manageable Pareto-optimal set. The results demonstrate the capabilities of the proposed approach to generate true and well-distributed Pareto-optimal nondominated solutions in one single run. The results also show the superiority of the proposed approach and confirm its potential to solve the multiobjective VAR dispatch problem.